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VIII.—PRIMULA CALCIPHILA.

THE SO-CALLED WILD FORM OF *Primula Sinensis*.

J. HUTCHINSON.

Since the year 1820, when it was first introduced into cultivation, *Primula sinensis* has been one of the most valuable and popular of our winter-flowering greenhouse plants. The species was first made known to botanists and horticulturists in this country through a drawing made in China in 1819 under the auspices of one John Reeves, an active member of the Horticultural Society in those days. This drawing so attracted the attention of the members of the Society that efforts were at once made to obtain living specimens. These were procured in 1820 by a Captain Rawes who presented them to his friend Thomas Palmer, of Bromley, Kent. Subsequently two coloured drawings were prepared from Mr. Palmer's plant, one being published by Lindley in his *Collecta Botanica*, tab. 7 (1821) as *P. sinensis*, and the other by Ker in the *Botanical Register* 1821, tab. 539 as *P. praenitens*.

In his description in the *Botanical Register*, Ker states that Rawes obtained his plant "from the gardens at Canton, where it probably found its way from some far more northern quarter of the Chinese Empire; none of this generic type having, we believe, been observed as natives of the levels of so low a latitude. Samples in a dried state, had been previously transmitted by Mr. Reeves, a gentleman in the employment of the East India Company at Canton."

P. sinensis was quickly distributed in gardens, for in 1825 a coloured picture was published in the *Botanical Magazine* (t. 2564), and it was noted therein that in March of that year there was already a large collection of the species at the Horticultural Society's gardens at Chiswick. In 1824 it was in the possession of Mr. Joseph Knight, the well-known Chelsea nurseryman. The plant figured in the *Botanical Magazine*

already showed reversion to the 5-parted calyx type, as distinguished from the 10-parted calyx type, a character specially remarked upon and figured by Lindley.

The name *P. praenitens* was evidently published a few months before *P. sinensis*, for Ker gives as a reason for not using *P. sinensis* the fact that the name had already been used by Loureiro in the *Flora Cochinchinensis* for another Chinese plant which might or might not belong to the genus *Primula*. It is to be regretted that the International Congress of Botanists at Vienna in 1905 did not consider the needs of horticulturists when formulating their rules and recommendations of botanical nomenclature. If they had done so they would surely have drawn up a list of *nomina conservanda* for well-known and generally accepted specific names of garden plants, amongst which would certainly have been included that of *Primula sinensis*. Who now wants to call this plant *P. praenitens* Ker, because the latter name was published a few months earlier, or because the name *P. sinensis* had already been used by Loureiro for another Chinese species, which has remained in obscurity ever since? Even Pax, the monographer of the genus in Engler's *Pflanzenreich*, has in this instance waived the rule of priority in favour of the generally accepted name, and it is to be hoped that all botanists will continue to follow him.

The task of following the fortunes of *P. sinensis* and its multitude of forms from its introduction to the present day is not within the scope of the present paper. For further information the reader is referred to Mr. A. W. Sutton's comprehensive paper on the subject in the *Journal of the Royal Horticultural Society*, n. ser. 13: 99-114 (1891). During the hundred years of its cultivation it has remained one of the chief ornaments of our greenhouses during the winter months, and in order fully to appreciate the great range of variability of this remarkable species a visit should be paid to the John Innes Horticultural Institution at Merton, where Dr. W. Bateson, F.R.S., has a large greenhouse entirely devoted to the species.

Our chief concern is rather with the so-called wild form of *Primula sinensis*. Apparently Hance was responsible for first considering an Ichang plant to be the wild form of *P. sinensis*; the specimen he determined was collected by T. Watters in 1879, and the identification appeared in Hance's paper entitled "Diagnoses of New and Habitats of Rare or Hitherto Unrecorded Chinese Plants" in the *Journ. of Bot.* 1880: 262. A few years later Franchet made a similar and apparently independent determination of a plant collected near Ichang by Delavay, for we have in the Kew Herbarium a wild specimen definitely named *P. sinensis* Lindl., collected by Delavay (No. 316) on 11th of March 1882, and communicated to Kew in April 1886. The first specimen received from Prof. A. Henry arrived at Kew in March 1886, but being fragmentary it was evidently not determined until several years later when Dr. Hemsley revised the

species of *Primula* for the Index Flore Sinensis. Much better material was received from Henry in September 1886 and compared by Professor D. Oliver with Delavay's collection. In 1897, when a drawing of the plant appeared in the Botanical Magazine, this determination was evidently never questioned by Sir Joseph Hooker who supplied the description. According to Hooker the plant figured there was one of a batch of seedlings grown by Lady Hutt, of Appleby Towers, Ryde, and raised from seed sent by Mr. Pratt from Ichang. Dr. Masters obtained some of these plants and passed them on to his friend Mr. Edmund Hyde, of Ealing, who was the first to flower this wild form in 1892.

During the last few years it has become manifest to several people that there must have been some error in the assumption that the Ichang plant was the wild form of *P. sinensis*. According to Dr. Bateson (see Gard. Chron. Ser. III. 55. 131 (1914)) all efforts to cross the Ichang plant with cultivated *P. sinensis* have failed, and he considers it impossible that it had anything to do with that species.

Collectors in China have subconsciously contributed remarks which greatly strengthen the view that the Ichang plant is something different from the cultivated *P. sinensis*. Thus Mr. E. H. Wilson writes (Gard. Chron. Ser. III. 40: 206 (1906)) :—" I may perhaps remind readers that in a wild state this plant (the Ichang plant) is a true perennial, and occurs on bare ledges and niches of cliffs fully exposed to the sun where it gets but very little moisture. In a state of nature the flowers are of a uniform mauve-pink, and I never saw any variation in colour, not even an albino. This is, to say the least, remarkable, when we consider the wide range of colour we find in this plant under cultivation. In late January and February the cliffs around Ichang, where this plant has its home, are a delightful picture. After flowering the flower-stalk becomes negatively heliotropic, an interesting biological character which the plant appears to have lost under long cultivation." Other limestone-loving species in China mentioned by Wilson are *P. yunnanensis*, *P. pulchella*, and *P. bracteata*. In the Gard. Chron. Ser. III. 37: 332 (1905) he also remarks on the great divergence of the florist's flower from the type as found growing near Ichang, and says that " the only thing that has remained constant is the perfume " !

The present writer is not entitled to credit for raising any of these doubts as to the authenticity of the wild form. His part has been merely to consider the evidence now available and to re-examine the specimens from the taxonomic standpoint. This he has done at the instigation of the Director of the Royal Botanic Gardens, Kew, who had himself prepared notes on the subject which have been kindly placed at his disposal. Thanks are also due to Dr. Bateson for similar facilities.

The differences between the two species in question and the closely allied *P. rupestris* are set out below, together with a

description of the Ichang plant, for which the name *P. calciphila* is proposed, in reference to its lime-loving character.

P. sinensis Lindl.

Habitat : not known.

Petioles : fleshy and rotting with age.

Calyx : much inflated (see text figure 2), often irregularly 10-toothed.

Corolla very variable.

P. calciphila Hutchinson.

Habitat : limestone cliffs of Ichang, Hupeh, China.

Petioles : becoming dry and persistent and forming a dense covering on the old stems.

Calyx : triangular in outline, truncate at the base shortly 5-lobed, the lobes shorter than the calyx-tube and broadly triangular.

Corolla : lobes often entire in the long-styled flower, usually more or less bilobed in the short-styled flower.

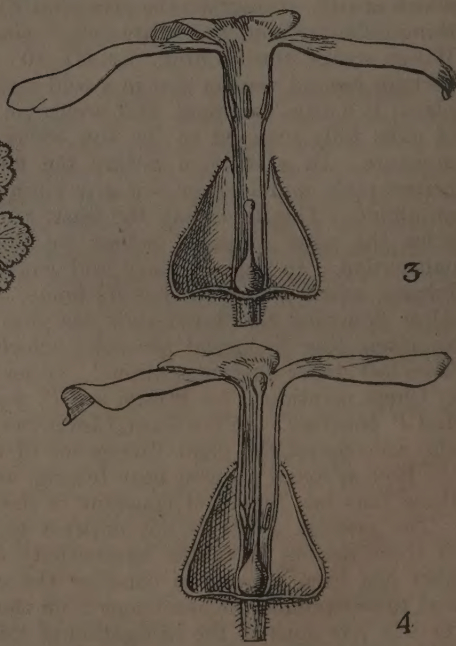
P. rupestris Balf. f. et Farrer.

Habitat limestone cliffs of Szechuan, China.

Petioles : as in *P. calciphila*.

Calyx : more or less as in *P. calciphila*, but divided beyond the middle into 5 elongated more or less lanceolate lobes.

Corolla : lobes rather widely and deeply bilobed.



1. Leaf of *Primula calciphila* Hutchinson $\times \frac{2}{3}$; 2, typical calyx of *P. sinensis* $\times 1\frac{1}{2}$; 3, longitudinal section of short-styled, 4, of long-styled flowers of *P. calciphila* $\times 2$.

In a large batch of cultivated plants of *P. calciphila* (see photograph) very little variation is observable. The leaves are

remarkably uniform in shape and indumentum. The colour of the flower varies very slightly from pale lilac to rose-lilac, the "eye" being a very pale greenish yellow. There is usually a remarkable difference in the corolla-lobes, however, which may be either 4 or usually 5-lobed; in the long-styled form the corolla lobes (*see* text figure 4) are often entire or almost entire at the apex, whilst in the short-styled form they are mostly conspicuously bilobed as shown in the photographic illustration. Very rarely one or two of the corolla lobes have an additional lobe on the inside near the base. *P. calciphila* will probably prove to be a valuable decorative plant during the winter months. It gained the Award of Merit at the Royal Horticultural Society's Show on Feb. 13th 1923. The following is a description of the new species:—

***Primula calciphila* Hutchinson, new species.**

Primula sinensis Hance in Journ. Bot. 1880 : 262; Franch. in Bull. Soc. Bot. Fr. 33 : 65 (1886); Hemsl. and Forbes in Journ. Linn. Soc. 26 : 42 (1889); Hook. f. Bot. Mag. t. 7559 (1899); A. Henry in Gard. Chron. Ser. III. 31 : 269, fig. 84, 85 (1902). Pax in Engl. Pflanzenr. Primul. 21 partly (1905); E. H. Wilson in Gard. Chron. Ser. III. 40 : 191, fig. 78 (1906).—non Sabine ex Lindl.

Herba perennis pilis brevibus albidis glandulosis ubique induta; caulis brevissimus, ramosus, basin versus petiolarum basibus persistentibus membranaceis imbricatis obtectus. Folia numerosa, radicalia, late ovato-rotundata, basi truncata vel late subcordata, apice rotundata, 3–5 cm. longa, 3–4 cm. lata, pinnatim 6–7-lobata, lobis oblongis vel rotundatis crasse et inaequaliter crenato-dentatis, utrinque breviter et molliter glanduloso-pubescentia; nervi laterales utrinsecus 3–4, supra leviter impressi, infra lati et prominentes, marginem versus furcati; petioli erecto-patentes, saepe circiter 10 cm. longi, basi supra complanati et canaliculati, longe ciliati, infra convexi et nitidi, superne subteretes et breviter glanduloso-pubescentes, circiter 2 mm. crassi. Inflorescentia umbellata, usque ad 14-flora, saepe circiter 6–8-flora; pedunculi erecti, usque ad 15 cm. longi, circiter 3 mm. crassi, glanduloso-pubescentes; bracteae lineares vel lineari-lanceolatae, subacutae, circiter 1 cm. longae, virides, basin versus carinatae, glanduloso-ciliatae et breviter glanduloso-pubescentes; pedicelli inaequales, usque ad 4 cm. longi, pilis patulis glandulosis pubescentes. Calyx ambitu triangularis, basi truncatus, circiter 1 cm. longus et latus, viridis, pilis glandulosis pubescens; lobi tubo breviores, triangulari-lanceolati, subacuti, 3–4 mm. longi. Corolla pallide lilacina vel roseo-lilacina, calyce duplo longior; tubus cylindricus, in forma brevistyla per tertiam partem summam in forma longistyla per tertias duas partes superiores dilatatus, apicem versus parce glandulosus; lobi 5 vel interdum 4, in forma longistyla interdum integri, in forma brevistyla bilobati, obovati, circiter 1.5 cm. longi et 1 cm. lati, supra basin versus pilis

glandulosus ornati. Stamina in forma brevistyla circiter 4 mm., in forma longistyla circiter 9 mm. infra apicem corollae tubi inserta; antherae fere sessiles, pallide flavae 3 mm. longae. Ovarium globosum, viride, glabrum; stylus pallidus, nunc circiter 3.5 mm. longus et stigmatate globoso, nunc 1 cm. longus et stigmatate obovoideo.

A perennial herb coated everywhere with short whitish gland-tipped hairs; stem very short, branched, when old closely invested by the persistent membranous bases of the petioles. Leaves numerous, radical, broadly ovate-rounded, truncate or widely subcordate at the base, rounded at the apex, 3-5cm. long, 3-4cm. broad, pinnately 6-7-lobate, the lobes oblong or rounded, rather coarsely and unequally crenate-dentate, shortly and softly pubescent on both surfaces with gland-tipped hairs; lateral nerves 3-4 on each side of the midrib, slightly impressed above, broad and prominent below, forked towards the margin; petiole erect-patent, usually about 10cm. long, flattened and grooved above towards the base and long-ciliate, convex below and shining, subterete and shortly glandular-pubescent upwards, about 2mm. thick. Inflorescence a simple umbel, up to about 14-flowered, usually about 6-8-flowered; peduncle erect, up to about 15cm. long, about 3mm. thick, glandular-pubescent; bracts as many as the flowers, linear or linear-lanceolate, subacute, about 1cm. long, green, keeled towards the base, glandular-ciliate and shortly glandular-pubescent; pedicels rather unequal, up to 4cm. long, pubescent with horizontally spreading gland-tipped hairs. Calyx triangular in outline, truncate at the base, about 1cm. long and broad, green, softly pubescent with gland-tipped hairs; lobes shorter than the tube, triangular-lanceolate, subacute, 3-4mm. long. Corolla pale lilac or rose-lilac; tube about twice as long as the calyx, cylindric, slightly wider in the upper third in the short-styled form, in the upper two-thirds in the long-styled form, sparingly glandular towards the top; lobes 5 or sometimes 4, often entire in the long-styled, usually bilobed in the short-styled flower, obovate, about 1.5cm. long and 1cm. broad, with a few shortly stalked glands towards the pale greenish yellow base. Stamens in the short-styled flower inserted about 4mm., in the long-styled flower about 9mm. below the apex of the corolla-tube. Anthers almost sessile, pale yellow, 3mm. long. Ovary globose, green, glabrous; style pale, about 3.5mm. long in the short form and with a globose stigma, about as long as the tube in the longer form, with an obovoid stigma.

Described from a batch of cultivated plants grown in the Royal Botanic Gardens, Kew—Type indicated in Herb. Kew; the following wild specimens belong to this species:—

CHINA. Hupeh: Shady places near Ichang, Jan. 1879, T. Watters; dry limestone cliffs near Ichang, 11th March, 1882, Delavay 316! A. Henry 879! 1103! 1292! Feb. 1900, E. H. Wilson 161! Mar. (fl.) and June (fr.) 1907, E. H. Wilson 67!

IX.—CONTRIBUTIONS TO THE FLORA OF SINALOA: I.

L. A. M. RILEY.

The State of Sinaloa is situated on the Pacific littoral of Northern Mexico, and is bounded on the north by Sonora and Chihuahua, on the east by Durango and on the south by Tepic, the Gulf of California forming its western limit. The greater part of Sinaloa lies north of the Tropic of Cancer. Its area is 33,671 sq. m., and the population in 1910 was estimated at 323,642 persons, of whom a large proportion consisted of Indians. Three climatic zones may be distinguished: "a narrow coastal zone where tropical conditions prevail, a broad belt of mountainous country covered by the ranges of the Sierra Madre Occidental and their intervening valleys where oak and pine forests are to be found, and an intervening zone among the foothills of the Sierra Madre up to an elevation of 2,000 ft., where the conditions are subtropical."*

There are two distinct seasons in most parts of Mexico, the dry (October to May) and the rainy (June to September). The warmest month is generally July, and the coolest December or January. The following data for the seaport of Mazatlan give some idea of the climate of the southern part of the coastal zone: total annual rainfall, 32 in.; mean monthly temperature of coolest month (January), 67° F., of warmest month (July), 82° F.† More detailed meteorological data for Mazatlan are given by Harshberger.‡ Rain is plentiful everywhere in Sinaloa except in the extreme north, where the conditions are arid.§

Phytogeographically speaking, the north of the coastal zone is included in the Sinaloa district of the Sonoran Desert Region, while the remainder of the coastal zone falls within the Jaliscan Region. The tract of mountainous country in the interior belongs, on the other hand, to the Western Sierra Madre Region.||

Our knowledge of the flora of Sinaloa may be said to commence with the publication of Seemann's *Flora of North-Western Mexico* (Bot. Herald, 257-346; 1856). The "Herald" anchored in the port of Mazatlan on Nov. 26, 1848, and remained there until Dec. 4. Seemann left the port without delay for San Sebastian, a small town about 1,000 ft. above sea-level, and on the following day proceeded to the Hacienda de las Naranjas, a farm on the foot of the Cerro de Pinal, where he "stayed two days, and found in the neighbourhood a fine mountain vegetation—pines and oaks in the greatest profusion." He returned by the same route, passing the villages of Santa Catarina and Nanches, and the town of San Sebastian and El Presidio de Mazatlan.

* Encycl. Brit., ed. 11, xxv: 140 (1911).

† Admiralty Intelligence Division, *Handbook of Mexico*, 35-38 (1919).

‡ Phytogeogr. Surv. N. Am., 150, 151 (1911).

§ Encycl. Brit., ed. 11, 140.

|| Harshberger, l.c. 636, 640, 657.

Seemann's second journey in Sinaloa was more extended. On Nov. 23, 1849, he left Mazatlan for San Sebastian, where he remained one day, and then proceeded towards Durango, reaching the village of Copala on Nov. 26 and Santa Lucia on Nov. 27. The latter village was one of the most charmingly situated places he had seen in Mexico, and he appears to have made extensive collections in the neighbourhood. "Situated about 4,000 feet above the sea, enjoying throughout the year a temperate climate, it lies in a romantic valley, encircled by wooded mountains, which admit a view of the Pacific Ocean. The houses of the Indians, scattered over an undulated surface, are surrounded by a vegetation in which the graceful forms of the tropics are harmoniously blended with those of the temperate zone. *Mimosae* stand in company with oaks and firs [pines], hardy *Umbelliferae* and *Compositae* with *Cupheas*, *Lobelias* and *Lophospermums*; nearly every hedge is overgrown by a splendid *Ipomoea*, the azure blossoms of which are from four to five inches across, and set so close together that hardly a leaf is to be seen, and the whole plant resembles a blue sheet, whence it derives its vernacular name, 'Manto de la Virgen' (Cloak of the Holy Virgin)."

Leaving Santa Lucia he passed Ocotes, a place deriving its name from the 'Ocote,' a pine from which pitch is made. The boundary of the State of Durango is about four miles beyond Ocotes, and the remainder of Seemann's journey to the city of Durango does not concern us. The return journey from Durango to Mazatlan (Feb. 13-22, 1850) was made under difficulties, and it is improbable that Seemann was able to do any collecting. "The road was in a terrible state, for the wild Comanche Indians having come near and killed several of the rancheros, most of the places were deserted, the people having fled."

In more recent years Sinaloa has been visited by various botanists including Palmer, Rose, and Brandegee. The last-mentioned published a list of the more interesting plants collected by him containing "in addition to descriptions of new species, only names of those plants whose distribution seems worthy of note."*

The present enumeration of Sinaloa plants has been based on (1) a collection of dried plants received from Señor J. Gonzalez Ortega; (2) the records in Seemann's Botany of the 'Herald,' and Hemsley's Biologia Centrali-Americana, Botany; (3) Brandegee's list, mentioned above; (4) numerous scattered records published in the Contributions from the United States National Herbarium, the Proceedings of the American Academy of Arts and Sciences, and elsewhere. Many species have also been included on the strength of the geographical distribution indicated in Standley's "Trees and Shrubs of Mexico."†

* Zoe, v. 196 (1905); et Lc. 241 (1906).

† Contrib. U.S. Nat. Herb., xxiii, part 1 (1920); part 2 (1922).

With regard to Seemann's records, it should be pointed out that many of his specimens were labelled and cited by him merely as "Sierra Madre." These have been provisionally included in the Sinaloa list, as there was no means of distinguishing those collected within the boundaries of Durango and Tepic. Such records require confirmation. The town of Agiabampo, visited by Palmer in 1890, lies actually within the boundary of Sonora. On account, however, of its proximity to Sinaloa, and also in view of the fact that the greater part of the Estero de Agiabampo lies in Sinaloa, it has seemed desirable to include records from this vicinity.

In order to economize space, the following abbreviations have been adopted: CNH., Contrib. U.S., Nat. Herb.; PAA., Proc. Am. Acad.; SBH., Seem. Bot. Herald.

I desire to acknowledge my indebtedness to Mr. T. A. Sprague, who has continuously placed his knowledge and advice at my disposal.

RANUNCULACEAE.

Clematis dioica L.; SBH. 267; CNH. xxiii. 267.

Between Mazatlan and San Sebastian, *Seemann*. [I have been unable to find Seemann's specimen.]

C. Drummondii Torr. et Gray; CNH. xxiii. 267.

C. Pitcheri Torr. et Gray; CNH. xxiii. 266.

Vernacular name "Barba de viejo."

DILLENIACEAE.

[**Curatella americana** L.

Tepic: Acaponeta, *Gonzalez* 1121. Vernacular name "Rasca la Vieja." Widely distributed in tropical America, but not hitherto recorded from Sinaloa.]

MAGNOLIACEAE.

Magnolia Schiedeana *Schlecht.*; CNH. xxiii. 275.

ANONACEAE.

Anona Cherimolia Mill.; Kew Bull., Aug. 1887, 15; CNH. v. 215.

"A very abundant fruit in the markets of Mexico."

Vernacular name "Chirimoya."

Sapranthus foetidus (Rose) *Safford*; CNH. xxiii. 278.—*Asimina foetida* Rose.

Vernacular name "Zopilotillo."

Sapranthus sp. nov.

San Ignacio: La Caña, 450 m. *Gonzalez* 856. Vernacular name "Zopilotillo." Allied to *S. nicaraguensis* Seem., from which it differs in the much smaller flowers and leaves. Material insufficient for description.

MENISPERMACEAE.

[Cocculus diversifolius DC.]

Widely distributed in Mexico as far southwards as the isthmus of Tehuantepec, and probably occurs in Sinaloa.]

Cissampelos Pareira L., var. typica Diels in Engl. Pflanzenr. Menisperm. 288.

San Ignacio : Yxtagua, 370 m., *Gonzalez* 753.

NYMPHAEACEAE.

Nymphaea elegans Hook. ; Conard, Waterlilies, 131.—*Castalia elegans* Greene; CNH. x. 94.

Topolobampo, *Palmer* ; Mazatlan, *Brandeggee* ; near Rosario, *Rose*.

PAPAVERACEAE.

Argemone mexicana L. ; SBH. 268.

San Ignacio : Rancho de los de Ponce, 260 m. *Gonzalez* 133.

Common in the lower coast region, according to Seemann.

Vernacular names : "Chicalote," "Cardo."

Bocconia arborea S. Wats. ; Hutchinson in Kew Bull. 1920, 277 ; CNH. xxiii. 300.

San Ignacio : Yxtagua, 500 m. *Gonzalez* 369. Vernacular names : "Palmilla," "Palo del diablo."

CRUCIFERAE.

Lepidium virginicum L., subsp. **centrali-americanum Thell.** Monogr. 231 (1906).

San Ignacio : Arroyo de la Labor, 380 m., *Gonzalez* 310.

CAPPARIDACEAE.

Cleome melanosperma S. Wats.

Rosario, *Rose* 1841.

Cleome sinaloensis Brandeggee in Zoe, v. 198 (1905).

Culiacan, *Brandeggee*.

Morisonia americana L. ; CNH. xxiii. 302.

Vernacular name "Chico."

Forchhammeria Watsoni Rose ; CNH. xxiii. 306.**Capparis flexuosa L.** ; CNH. xxiii. 303.**C. indica (L.) Fawcett et Rendle** ; CNH. xxiii. 304.—*C. Breynia* L. *C. amygdalifolia* Jacq.**C. verrucosa Jacq.** ; Sel. Stirp. Am. Hist. 159, t. 99 ; Eichl. in Mart. Fl. Bras. xiii. pars 1, 285, t. 63, fig. 2 ; CNH. xxiii. 303.—*Capparis Palmeri* Rose.

Mazatlan, *Coulter* 669.

Crataeva Palmeri Rose ; CNH. xx. 183.

Fuerte, Guadalupe, Culiacan and San Blas, *Rose*, *Standley & Russell* 13482, 14676, 14846, 13210.

C. Tapia *L.*; SBH. 268.Mazatlan, *Seemann*.

[The genus *Atamisquea* Miers should be looked for in Sinaloa, where it may be expected to occur on account of its known distribution.]

CISTACEAE.

Halimium concolor *Riley*, sp. nov.; affine *H. Coulteri* S. Wats., foliis concoloribus, indumento foliorum nunquam tomentoso et inflorescentia compactione differt.

Fruticulus erectus, ramosus, caulibus pilis fulvis stellato-pubescentibus, superne stellato-tomentellis. *Folia* breviter petiolata, elliptica, acuta vel obtusiuscula, basi attenuata, 1.5–2 cm. longa, 4–6 mm. lata, concoloria, utrinque pilis discretis stellato-pubescentia, subtus fasciculis densioribus, nunquam tomentosa, costa tantum valde prominente. *Inflorescentia* capitato-congesta, multiflora. *Sepala* sub fructu lanceolata, acuminata, circiter 6 mm. longa, longe albo-hirsuta. *Petala* non visa. *Capsula* glabra, sepala vix superans, valvis anguste ovatis, apice obtusis vel emarginatis.

SINALOA: San Ignacio; Cerro del Buen Retiro, 1660 m., *Gonzalez* 842 (type in Herb. Kew.).

[*H. glomeratum* (*Lag.*) *Gross.* has been recorded from Tepic and Durango, but there are no specimens from Sinaloa in the Kew Herbarium or British Museum.]

VIOLACEAE.

Viola Grahamsi *Benth.* Pl. Hartweg. 35; Hemsl. Biol. i. 50. Sierra Madre, *Seemann*.

Viola pteropoda *Hemsl.*; Biol. i. 51.—*V. Hookeriana* *Seem.* Bot. Herald, 269 (1856), non H. B. K. Sierra Madre, *Seemann* 2144.

Ionidium lasiocarpum *Presl.*; *Zoe*, v. 213. Culiacan and Cofradia, *Brandege*.

BIXACEAE.

Cochlospermum vitifolium *Willd.*—*C. hibiscoides* *Kunth.*; Hemsl. Biol. i. t. 2. *Maximiliana vitifolia* *Krug. et Urb.*; Blake in Journ. Wash. Acad. Sc. xi. 128 (1921).

San Ignacio: Agua Colgada, 405 m., *Gonzalez* 774.

Vernacular name "Rosa amarilla." The orange inner bark is used in Sinaloa for making ropes. The branches root readily if thrust into the ground, and are frequently used to form hedges.

Amorexia Gonzalezii *Sprague et Riley* in Kew Bull. 1922, 102, t. 1, fig. 1.

Choix: Cerro del Muerto, 620 m. *Gonzalez* 897 (type in Herb. Kew.). Vernacular name "Zaya."

A. palmatifida *Moc. et Sessé ex DC.*; Zoe, v. 213; Sprague in Kew Bull. 1922, 104, t. 1. fig. 5.

Between Rosario and Colomas, *Rose* 1624; Culiacan, *Brandeggee*. *Rose*'s specimen differs from typical *A. palmatifida* in the less deeply divided leaves, which have broader segments with a shorter basal portion. The serration is coarser, and the mesophyll is conspicuously marked on the lower surface with irregular dots and dashes due to the presence of resin. I have not seen *Brandeggee*'s specimen.

Bixa Orellana *L.*; SBH. 268; Kew Bull. July, 1887, 1-8; Sept. 1887, 1-4.

Common in the coast region, from Mazatlan southwards, according to *Seemann*. Vernacular name "Achiote."

POLYGALACEAE.

Polygala Albowiana *Chod.* in Bull. Herb. Boiss. iii. 123 (1895); Zoe, v. 204.

Cerro Colorado, *Cofradia*, *Brandeggee*.

Polygala alba *Nutt.* var. **tenuifolia** *Blake* in Contr. Gray Herb. n.s. xlvii. 86 (1916).—*P. bicolor* *H. B. K.*; SBH. 269.

Sierra Madre, *Seemann* (Gray Herb.).

P. alba *Nutt.* var. **suspecta** *S. Wats.*; *Blake* l.c.—*P. bicolor* *H. B. K.*; SBH. 269. *P. verticillata* *Hemsl.* Biol. i. 62 (1879), non *Linn.*

Sierra Madre, *Seemann* 2153 (Brit. Mus.).

P. collina *Brandeggee* in Zoe, v. 204 (1905).

Cerro Colorado, *Brandeggee*.

P. crinita *Chod.*; *Blake* l.c. 89.—*P. setifera* *Brandeggee* in Zoe, v. 205.

Cerro Colorado, *Brandeggee*.

P. glochidiata *H. B. K.*; Zoe, v. 204; *Blake* l.c. 91.—*P. paniculata* *Seem.* Bot. Herald, 269 (1856), non *Linn.*

Cerro de Pinal, *Seemann*, 1519 partim (Herb. Kew.); Cerro Colorado, *Brandeggee*.

P. gracillima *S. Wats.*; *Blake* l.c. 97.

Cerro de Pinal, *Seemann* 1519 partim (Herb. Kew.).

Polygala sinaloensis *Riley*, sp. nov.; affinis *P. appressipili* *Blake*, foliis majoribus lanceolatis membranaceis utrinque viridibus, pedicellis gracilioribus, floribus minoribus, alis apice obtusis nec rotundatis differt.

Suffruticulus, ut videtur, caulibus simplicibus, ad 3.6 dm. altis, pilis incurvis appressis obtectis. *Folia* breviter petiolata, lanceolata, acuta, minute cuspidato-apiculata, basi inaequaliter acuta, 3.5-5.2 cm. longa, 1-1.7 cm. lata, membranacea, utrinque viridia, sparse puberula pilis incurvo-appressis, nervis 2-3 jugis; petiolus 2 mm. longus. *Racemi* laxiflori, ad 13 cm. longi. *Pedicelli* 3 mm.

longi, gracillimi, appresso-puberuli. *Flores*, ut videtur, ochroleuci. *Sepala* ciliata, extra pilis grossiusculis incurvo-appressis induta, anteriora oblique ovato-lanceolata, 3 mm. longa, 1 mm. lata, posterius ovato-lanceolatum, 4 mm. longum, 2 mm. latum. *Alae* ellipticae, apice obtusae, basi cuneatae, vix ciliatae, venis haud prominentibus, epunctatae. *Carina* glabra, 7 mm. longa, 1.5 mm. lata. *Petala* superiora oblonga, obtusa, utrinque glabra, vix ciliata, 5 mm. longa, 1.5 mm. lata. *Capsula* suborbicularis, juventute 7–8 mm. longa, 6 mm. lata, marginibus ciliatis exceptis glabra.

SINALOA: San Ignacio; Arroyo del Coacoyol, 400 m. Gonzalez 588 (type in Herb. Kew.).

I find the measurements given by S. F. Blake in his Revision of the Genus *Polygala* (Contr. Gray Herb. xlvii. 41) for the flowers of *P. appressipilis* are smaller than those which I found on measuring a moistened flower of that species. My measurements are:—anterior sepals 4 mm. long; posterior sepal 5 mm. long; carina 8 mm. long. My measurements for *P. sinaloensis* are from the moistened flower.

Monnina xalapensis Kunth.; SBH. 270; Hemsl. Biol. i. 63. Sierra Madre, N.W. Mexico, Seemann 2154.

Krameria bicolor S. Wats.; CNH. xxiii. 348.

Choix: El Rincon, 700 m. Gonzalez 889. Vernacular name "Guachapurillo." This may be a variety. It differs, in comparison with the type number, in being less densely hairy in all its parts, in having longer and slenderer branches, sparser foliage and, on the whole, narrower leaves. The spines of the fruit are slender, whereas Watson has described those of *K. bicolor* as being "rather stout." I have not seen fruits of the type number.

K. Palmeri Rose in CNH. i. 304 (1895); CNH. xxiii. 347. Agiabampo, Palmer 753.

K. prostrata Brandegee in Zoe, v. 200 (1905); CNH. xxiii. 347.—*K. diffusa* Rose et Painter in CNH. x. 107 (1906). Cofradia, Brandegee; Ymala, Palmer 1671.

CARYOPHYLLACEAE.

Stellaria nemorum L.; SBH. 270.

Sierra Madre, N.W. Mexico, Seemann 2145.

Drymaria effusa A. Gray; Zoe, v. 198. Cofradia, Brandegee.

[**D. cordata** Willd.

Widely distributed in both hemispheres, but I have found no record for Sinaloa. It is recorded from Chihuahua, Durango, Jalisco, etc.]

PORTULACACEAE.

Portulaca oleracea L.; SBH. 270.

Common about Mazatlan, where it is used as a potherb.

Vernacular name "Verdolaga." Seemann did not definitely determine the species and, apparently, did not collect it. There can be little doubt, however, that it is *P. oleracea*, for which "Verdolaga" is the common name throughout Central and South America.

P. suffrutescens Engelm. in Coult. Bot. Gaz. vi. 236 (1881).—*P. stelliformis* Moc. et Sessé ex DC. Prod. iii. 353, in syn. Agiabampo, Palmer 804.

Talinum paniculatum (Jacq.) Gaertn.; CNH. xiii. 288.—*T. patens* Willd.

Near Rosario, on the road to Acaponeta, Rose 1853.

THEACEAE.

Ternstroemia lineata DC. Mém. Ternstroem. 17, t. 1 (1823); Choisy, Mém. Ternstroem. 17.—*T. Topegapote* Seem. Bot. Herald, 272 (1856), non *T. Tepezapote* Cham. et Schlecht. Sierra Madre, on the road leading from Mazatlan to Durango.

MALVACEAE.

Malva parviflora L.; CNH. v. 180.

Colomas, Rose 1723. Vernacular name "Malva castilla."

Malvastrum scabrum A. Gray; CNH. i. 305.

Agiabampo, Palmer 790.

M. tricuspidatum A. Gray; CNH. v. 181.

Between Rosario and Concepcion, Rose 3263; Rosario, Rose 1597.

Anoda crenatiflora Ort.; Zoe, v. 213.—*A. parviflora* Cav.

Cofradia and Culiacan, Brandegee. San Ignacio, Arroyo de Campanillas, 375 m., Gonzalez 594.

A. pentaschista A. Gray; CNH. i. 305; Zoe, v. 213.

Agiabampo, Palmer 780; Culiacan, Brandegee.

A. reticulata, S. Wats.; Zoe, v. 213.

Cerro Colorado, Brandegee.

Anoda urophylla Riley, sp. nov.; affinis *A. caudatifoliae* Robinson et Greenman, foliis vix dentatis, pilis patentibus fulvis haud albis differt.

Suffrutex, ut videtur, caulibus fulvo-tomentellis pilis longioribus patentibus interspersis. *Folia* cordato-ovata, apice caudato-acuminata, inconspicue dentata, 8.5–9.5 cm. longa, 6–6.5 cm. lata, membranacea, utrinque viridia, supra stellato-pubescentia, subtus densius stellato-pubescentia vel tomentella; petioli 8.5–9.5 cm. longi, breviter pubescentes pilis longioribus patentibus interspersis. *Inflorescentia* paniculata terminalis. *Pedicelli* usque ad

8 mm. longi, obtecti, ut pedunculi, pilis fulvis longis patentibus. *Calyx* 6 mm. longus, dense pilosus, 10-nervis, venosus, haud ad medium 5-lobatus, lobis ovato-triangularibus acuminatis. *Petala* 12 mm. longa, unguiculis margine dense pilosis. *Stamina* 30. *Stylus* glaber in quinque ramos capitato-stigmatosos divisus. *Ovarium* 5-loculare, pericarpio membranaceo; ovula in loculis solitaria, pendentia. *Fructus* non visus est.

SINALOA: Choix; El Rincon, 670 m., Gonzalez 888 (type in Herb. Kew.). Vernacular name "Malva liza."

Periptera punicea DC.; Zoe, v. 212.—*Anoda periptera* (Sims) Hochr. in Ann. Conserv. et Jard. Bot. Genève, xx. 41 (1916). *Anoda punicea* Lag.; E. G. Baker in Journ. Bot. 1892, 74. Cerro Colorado, Brandegee.

Sida acuta Burm.—*S. carpinifolia* L. f.; SBH. 271. *S. acuta* var. *carpinifolia* K. Schum.; CNH. v. 176.

Common along the coast, Seemann; Mazatlan, Rosario, and Colomas, Rose 1377, 3102, 3160, 3198. San Ignacio, El Espinal, 330 m., Gonzalez 528.

Typical *S. acuta* as depicted by Rheede, Rumphius and Plukenet seems to grade imperceptibly into the variety *carpinifolia*.

S. aggregata Presl; Zoe, v. 212.
Culiacan and Cofradia, Brandegee.

S. alamosana S. Wats.; Zoe, v. 212.
Culiacan and Cofradia, Brandegee.

S. anomala St. Hil.; Zoe, v. 212.
Culiacan, Brandegee.

S. linifolia L.
San Ignacio: Cerro de Potrerillo, 720 m., Gonzalez 611.

S. lodigensis E. G. Baker in CNH. iii. 311 (1895); Zoe, v. 212.
Lodiego, Palmer 1577; Between Ymala and Cofradia, Brandegee.

S. longifolia Brandegee in Zoe, v. 212 (1905).
Cerro Colorado, Brandegee.

S. rhombifolia L.; SBH. 271.
Common along the coast, Seemann; San Ignacio: between Tacuitapa and Espinal, 340 m., Gonzalez 530. Vernacular name "Malva colorada."

S. salviifolia Presl.; Zoe, v. 212.
Culiacan, Brandegee.

S. tragiifolia A. Gray; CNH. v. 177.
Topolobampo, Palmer 199.

Wissadula incana Brandegee in Zoe, v. 210 (1905).
Culiacan, Brandegee.

W. wissaduloides (E. G. Baker) Rose; CNH. v. 179; Zoe, v. 210; R. E. Fries in Svensk. Vet.-Akad. Handl. xliii. no. 4,

84.—*Abutilon wissaduloides* E. G. Baker in CNH. iii. 312 (1895).

Ymala, Palmer 1720; Cofradia, Brandegee.

Pseudabutilon paniculatum (Rose) R. E. Fries, l.c. 104.—*Wissadula paniculata* Rose in CNH. v. 178 (1899): Zoe, v. 210.

Ymala, Palmer 1783; Cofradia and Culiacan, Brandegee.

P. spicatum (H. B. K.) R. E. Fries, l.c. 98.—*Wissadula spicata* Presl. *W. elongata* Brandegee in Zoe, v. 210 (1905).

Cofradia and Culiacan, Brandegee. San Ignacio: Campanillas, 590 m., Gonzalez 549. Vernacular name "Pelotazo."

Abutilon crispum Medic.; CNH. v. 170; Zoe, v. 212.

Altata, Rose 1336. Yervacito, Brandegee. San Ignacio: Los Chinacates, 370 m. Gonzalez 517. Vernacular names "Pelotazo," "Cotolahue."

A. incanum Sweet; CNH. i. 307; Zoe, v. 212.

Agiabampo, Palmer 768; Culiacan, Brandegee.

A. membranaceum E. G. Baker in CNH. iii. 312 (1895).—*Sida dumosa* Seem. Bot. Herald, 271, non Swartz.

Santa Lucia, Seemann 2146.

Seemann's 2146, like several other plants collected by him in the Sierra Madre, has been erroneously labelled "Panama" in Herb. Mus. Brit. It differs from the type of *A. membranaceum* in having the staminal tube pilose almost to the apex.

A. triquetrum Presl.; CNH. i. 307.

Agiabampo, Palmer 810.

Malachra capitata L.; Zoe, v. 212.

Culiacan, Brandegee.

Malvaviscus arboreus Cav.; SBH. 271.

Mazatlan, common, Seemann. [I have not seen Seemann's specimen.]

M. rivularis Brandegee in Zoe, v. 211.

Banks of the Cofradia River, Brandegee. Vernacular name "Media Noche."

Kosteletzkya paniculata Benth.; Zoe, v. 211.

Cerro Colorado, Brandegee. San Ignacio: Yxtagua, 650 m., Gonzalez 485.

K. stellata Fernald in Bot. Gaz. xx. 532 (1895).

Mazatlan, W. G. Wright 1241; Isla Piedra, Mazatlan, Lamb 374.

Hibiscus Coulteri Harv.; CNH. i. 308; CNH. v. 174; Zoe, v. 211.

Agiabampo, Palmer 779; Topolobampo, Palmer 192, a very large flowered form; Culiacan, Brandegee.

H. violaceus Brandegee in Zoe, v. 211 (1905).

Culiacan and Cofradia, Brandegee.

Gossypium hirsutum L.; Watt, Wild and Cultivated Cottons of the World, 183, t. 30.

Sinaloa, *Gonzalez* 669. Vernacular name "Algodon."

Erioxylum aridum *Rose et Standley* in CNH. xiii. 308 (1911).

Near Culiacan, *Rose, Standley and Russell* 14999; near La Rastra, *Goldman* 267.

BOMBACACEAE.

Bombax Palmeri *S. Wats.*; CNH. v. 179.

Near Colomas, *Rose* 3215. San Ignacio: Paraje de los Sabinos, 500 m., *Gonzalez* 259. Vernacular name "Cuajilote."

Ceiba grandiflora *Rose*; CNH. v. 180.

Near Colomas, *Rose* 1705; near Rosario, *Rose* 3161.

Ceiba pentandra (L.) *Gaertn.*—*C. casearia* *Medic.*; CNH. v. 250.

Eriodendron anfractuosum DC.

Concepcion, *Rose*.

STERCULIACEAE.

Helicteres guazumifolia *H. B. K.*—*H. mexicana* *H. B. K.*

Tacuinapa: El ojo de Agua, 48 m., *Gonzalez* 1132.

Vernacular name "Guasimilla."

H. mollis *Presl.*; *Zoe*, v. 213.

Cerro Colorado, *Brandegee*.

Physodium corymbosum *Presl.*

San Ignacio: Coyotitan, 280 m., *Gonzalez* 120. Vernacular name "Rechinador."

Melochia hirsuta *Cav.*; *K. Schum.* in *Mart. Fl. Bras.* xii. pars 3, 46.—*M. serrata* (Vent.) *St. Hil. et Naud.*; *Zoe*, v. 213.

Culiacan, *Brandegee*.

Brandegee recorded his specimen as *Melochia serrata* *Benth.* *Hemsley* (*Biol.* i. 130, 131) included *M. serrata* *Benth.* and *M. hirsuta* *Cav.* as separate species, but cited the same specimens under both names. The combination *Melochia serrata* (Vent.) was proposed by *St. Hilaire* and *Naudin* in 1842, two years before *Bentham* used it in the "Botany of the Sulphur." *Schumann* l.c. quoted *Bentham* as having used the name in *Hook. Journ. Bot.* iv. 130 (1842), but it does not occur there.

M. speciosa *S. Wats.*; *Zoe*, v. 213.

Between Altata and Culiacan, *Brandegee*.

Waltheria acuminata *Rose* in CNH. v. 183 (1899); *Zoe*, v. 213.

Culiacan, *Palmer* 1793; *Cofradia*, *Brandegee*.

W. americana L.; CNH. v. 184.

Mazatlán, *Rose* 1376.

W. detonsa *A. Gray.*

San Ignacio: between Tacuitapa and Espinal, 330 m., *Gonzalez* 529.

Guazuma tomentosa H. B. K. ?

San Ignacio : Rancho de los Humayes, 320 m., *Gonzalez* 444.
Vernacular name "Guásima."

Gonzalez' specimen is without flowers and fruits, but appears to be conspecific with *Herb. Berland. Texano-Mexicanum* nos. 716 and 2133. *G. tomentosa* H. B. K., which was treated by K. Schumann (*Mart. Fl. Bras. xii. pars 3, 81*) as a synonym of *G. ulmifolia* Lam., differs from the latter not only in indumentum, but in the shape of the fruits, which are ellipsoid or oblong instead of globose.

Buettneria carthaginensis Jacq.

San Ignacio : San Agustin, Camino del Palmario 210 m.,
Gonzalez 619. Vernacular name "Arrendador."

B. tiliifolia Presl. ; Zoe, v. 213.

Common about Culiacan, *Brandege*.

TILIACEAE.

Triumfetta dehiscens Rose in CNH. xii. 285 (1909).

Near Colomas, *Rose* 1698.

T. Goldmanii Rose, l.c.

Sierra de Choix, *Goldman* 264.

T. insignis S. Wats.

San Ignacio : Yxtagua 480 m., *Gonzalez* 467. Vernacular names "Pastora," "Guachopure."

Triumfetta Sanctae-Luciae *Sprague*, sp. nov.; foliis parvis lanceolatis caudato-acuminatis glabris, inflorescentia paniculata, alabastris fere glabris circiter 1.8 cm. longis, nectariis androgynophori oblongis distincta.

Ramuli graciles, 1-1.5 mm. diametro 3 dm. infra apices, superne minute stellato-puberuli, mox glabrescentes, obscure brunnei. *Folia* lanceolata, basi rotundata vel leviter subcordata, acute caudato-acuminata, 2.5-5 cm. longa, 1-2 cm. lata, crenato-serrata serraturis glanduloso-apiculatis, glandulis 2 vel 4 inferioribus conspicuis, leviter discolora, nervis stellato-puberulis ceterum glabrata, basi trinervia vel subquinenervia, nervis utrinque trijugis (iis caudae non inclusis), pergamentacea; petioli 1-2 cm. longi, minute stellato-pubescentes, 2-3 mm. infra laminam sursum incrassati; stipulae subulatae, circiter 2 mm. longae. *Paniculae* terminales, subaphyllae; rami primarii apice bracteas solitarias subfoliaceas anguste lanceolatas acuminatas 1.5-1.8 cm. longas 3.5-5 mm. latas gerentes, inferiores ter ramificati, pluriflori; pedicelli 5-7 mm. longi, graciles. *Sepala* circiter 1.8 cm. longa, inferne 1.5 mm. lata et ciliata, superne 0.6 mm. lata, extra glabra, apice cornuta cornibus 0.75 mm. longis. *Petala* anguste lanceolata, circiter 1 cm. longa, 1.5 mm. lata, ungue 1.5 mm. longo villosa. *Androgynophorum* 0.8 mm. longum nectariis oblongis non contiguis 0.5-0.6 mm. longis.

Annulus 0.2 mm. longus, ciliatus. *Stamina* circiter 20; filamenta inferne pilosa; antherae 0.8 mm. longae. *Ovarium* triloculare; stylus circiter 1.8 cm. longus. *Fructus* (immaturus) dense aculeatus; aculei spinulis solitariis rectis terminati.—*T. grandiflora* Seem. Bot. Herald, 272, non Vahl. *T. polyandra* Hemsl. Biol. Centr.-Amer., Bot. i. 138, partim, non DC.
SINALOA: Santa Lucia, about 1,200 m., November 1849, Seemann 2147 (type in Herb. Kew.).

***Heliocarpus attenuatus* S. Wats.**

Choix: Tasajera, 420 m., Gonzalez 860. Vernacular name "Zamo baboso."

***H. glaber* Brandegee** in Zoe, v. 209 (1905).

Cerro Colorado; Humaya River near Culiacan, Brandegee.

***Corchorus pilolobus* Link; CNH. i. 310.—*C. hirtus* var. *pilolobus* K. Schum. in Mart. Fl. Bras. xii. pars 3, 128, pro parte (excl. syn. *C. tortipes* St. Hil.).**

Agiabampo, Palmer 763.

X. DECADES KEWENSES.

PLANTARUM NOVARUM IN HERBARIO HORTI REGII CONSERVATARUM.

DECAS CVII.

1061. ***Orophea torulosa* Hutchinson** [Anonaceae—Miliuseae]; affinis *O. enterocarpae* Hk. f. & Thoms., sed ramulis ultimis robustioribus elongatis, foliis late ellipticis majoribus, fructus segmentis multo brevioribus differt.

Ramuli elongati, glabri, nitentes, internodiis circiter 4 cm. longis. *Folia* late elliptica, abrupte et longe acuminata, basi rotundata, 9–14 cm. longa, 4–6 cm. lata, chartacea, supra glabra, infra parce pilosa vel demum glabra, costa prominente appresse pilosa; nervi laterales utrinsecus circiter 8, a costa sub angulo 45° abeuntes, intra marginem conjuncti, infra prominentes; petioli crassi, circiter 3 mm. longi, transverse rugosi et parce setosi. *Flores* axillares, subsessiles. *Sepala* anguste triangularia, acuta, 2 mm. longa, appresse pilosa. *Petala* exteriora late ovata, acuta, 3 mm. longa, dense ciliolata, extra parce puberula, intra glabra, interiora multo longiora, basi late aperta, superne conniventia et crasse carnosa, recurva, parce puberula. *Antherae* curvatae, 1 mm. longae, connectivo triangulare. *Carpella* glabra, compressa. *Fructus* torulosus, circiter 7 cm. longus, segmentis vix 1 cm. longis et 7 mm. crassis.

MIDDLE ANDAMAN ISLANDS: 15 March, 1913, C. E. Parkinson 10.

1062. ***Aeschynomene bracteolaris* Riley** [Leguminosae—Hedysareae]; affinis *A. amorphoidi* Rose, foliis angustioribus, calyce pubescente, bracteolis majoribus, et inflorescentia differt.

Fruticulus erectus, inermis, caulibus breviter pubescentibus. *Folia* 4-5 cm. longa, petiolata, pennivenia, 22-26-juga; foliola oblongo-linearia, 5 mm. longa, 1.5 mm. lata, utrinque appresse pubescentia, basi oblique rotundata, apice acuta, valde mucronata, mucrone circiter 1 mm. longo. *Inflorescentiae* ramosae, ramulos foliatis circiter 10 cm. longos terminantes; ramuli inferiores inflorescentiae 5-8 cm. longi, superiores circiter 1 cm. longi. *Stipulae* parvae caducae. *Pedunculi* pluriflori, hirsuti. *Bracteolae* rotundatae, pubescentes, ciliatae, fere dimidium longitudinis calycis aequantes. *Flores* 5 mm. longi. *Calyx* pubescens, lobis rotundatis ciliatis. *Corolla* glabra. *Ovarium* sparse ciliatum, attenuatum.

MEXICO Sinaloa: San Ignacio; El Coacoyal, Gonzalez 586 (type).

1063. **Vaccinium Gonzalezii** Riley [Vacciniaceae-Vaccinieae]; affinis *V. angustifolio* Benth., foliis latioribus lanceolatis tenuioribus, bracteolis medio pedicellorum insertis, calycis lobis haud acuminatis, inflorescentiis brevibus ramulos foliatis non terminantibus differt.

Fruticulus ramis puberulis. *Folia* lanceolata, 2-3 cm. longa, 8-10 mm. lata, conspicue dentata, breviter obtuse apiculata, vix coriacea, utrinque glabra, costa supra excepta, nervis venulisque prominentibus. *Racemi* 2-3 cm. longi, pubescentes, non foliati, a basi ad apicem floriferi. *Bracteae* plus minusve subfoliaceae, glanduloso-dentatae, ciliatae. *Pedicelli* axillares, solitarii, brevissimi, pubescentes. *Bracteolae* lineari-lanceolatae, valde ciliatae, medio pedicelli insertae. *Flores* parvi, sed in alabastro tantum visi. *Calycis* lobi deltoidei, superne valde ciliati. *Antherae* dorso barbatae, apice loborum longe aristatae.

MEXICO. Sinaloa: San Ignacio; Mesa de Bueso, 1250 m. Gonzalez 839 (type). Vernacular name "Madroño chino."

1064. **Torenia courtallensis** Gamble [Scrophulariaceae-Gratiolaeae]; *T. cordifoliae* Roxb., affinis sed decumbens nec erectus, calycibus anguste oblongis, pedicellis longioribus et foliorum petiolis brevioribus differt.

Herba, verosimiliter perennis, ramis tetragonis longis decumbentibus ad nodos radicantibus. *Folia* triangulari-ovata, apice acuta, basi obtusa, crenato-serrata, supra praecipue margines versus hispida, subtus fere glabra, 4-5 cm. longa, 2 cm. lata: petiolus 3-10 mm. longus, hispidus. *Flores* axillares, parvi, pedicellis gracilibus 3-6 cm. longis. *Calyx* anguste oblongus, alatus, circiter 1 cm. longus, alis ciliatis exceptis glaber, lobis lanceolatis apice tortis. *Corolla* calyce bis longior, lilacina, lobis inferioribus purpureo-maculatis. *Stamina* inferiora filamentis appendice clavato instructis. *Capsula* oblonga, apice acuminata, 7 mm. longa, seminibus rugosis.—*T. cordifolia* Hook. f., Fl. Br. Ind. iv. 276, partim, non Roxb.

S. INDIA, Courtallum and Sivagiri hills in Tinnevely, *Wight* K.D. 2378, Hb. propr. 2205, 2476; Kannikatti, Tinnevely, *Barber* 2997; Naterikal to Singalteri, 1200 in. alt. *Hooper and Ramaswami* 3807; High Wavy Mountain, Madura 1300-1500 m. *Blatter and Hallberg* 504. Travancore hills, *T. F. Bourdillon* 345.

1065. ***Buchnera minor* Riley** [Scrophulariaceae-Gerardiaceae]; affinis *B. mexicana* Hemsley, foliis latioribus trinerviis nonnunquam paucidentatis, bracteolis quam bractea conspicue brevioribus, calycis dentibus longioribus, corolla minore tubo breviori differt.

Herba erecta, scabra, caulibus simplicibus vel superne pauciramosis, 5-7 dm. longis. *Folia* linearia-lanceolata, 2-4.5 cm. long, 2.5-6 mm. lata, trinervia, scabra, nonnulla paucidentata; folia superiora linearia. *Spicae* multiflorae, paribus florum satis approximatis. *Bracteae* 5.5-6 mm. longae; bracteolae 3-4 mm. longae. *Flores* brevissime pedicellati. *Calyx* dentibus inclusis 8 mm. longus, decem nervis setosis exceptis glaber, dentibus subulatis inaequalibus, 2.5-3.5 mm. longis. *Corolla* fauce barbata excepta glabra, tubo 1 cm., lobis 8 mm. longis. *Capsula* 6 mm. longa, glabra, seminibus sulcatis.—*B. mexicana* var. *minor* Hemsley, Biol. Centr.-Amer. Bot. ii. p. 457 (1882).

MEXICO. Sinaloa: near Mazatlan; Cerro de Pinal, *Seemann* 1506 (type); Municip. San Ignacio: between Agua Fria and Ixtagua, 330 m., *Gonzalez* 697. West Mexico, *Seemann* (Herb. Benth.). Vernacular name "Tinterillo."

1066. ***Didymocarpus Fischeri* Gamble** [Gesneriaceae-Didymocarpeae]; *D. Rottlerianae* Wall. affinis, foliis profunde crenatolobulatis sed scapo longiore, corolla majore et capsula longiore et crassiore differt.

Herba scapigera acaulis. *Folia* obovato-spathulata, apice obtusa, base attenuata et petiolum alatum formantia, profunde (saepe ad 1 cm.) crenata, crenaturis latissimis crenulatis, supra minute bullata et pilorum alborum fasciculis mollibus ornata, infra etiam praecipue in junioribus lanata, 12-14 cm. longa, 6-8 cm. lata; nervi utrinque circiter 7, cito ramosi; petiolus cum alis 1 cm. ultra latus. *Scapi* 2-5, erecti, pedunculis pubescentibus ad 24 cm. longis, deinde dichotome bifidi, ramulis racemosis paucifloris, pedicellis gracilibus, fructiferis 2-3 cm. longis. *Calyx* longe villosus, lobis lineari-lanceolatis 2-3 mm. longis. *Corolla* late campanulata, paulo ventricosa, lobis patentibus, 1-1.5 cm. longa, verosimiliter lilacina. *Ovarium* villosum, stylo superne glabro, stigmatibus bilobis. *Capsula* linearis, acuta, ad 3 cm. longa, minute villosa.

SOUTH INDIA. Anamalai Hills; Coimbatore District, 500-600 m. alt. *C. E. C. Fisher* Aug. 1915.

1067. ***Calanthe pubescens* Ridley** [Orchidaceae-Epidendreae]; *C. veratrifoliae* affinis, sed foliis et scapo dense pubescentibus, labelli epichilio profunde bilobo, lobis spathulatis, unguiculatis.

Herba, 60 cm. alta. *Folia* herbacea, elliptica, acuminata, ad basim angustata, 30 cm. longa, 10 cm. lata, subtus pubescentia, nervis prominulis 7, petiolo 15 cm. longo dense pubescente. *Scapus* 45 cm. altus, dense pubescens, parte florifera 15 cm. longa. *Bractee* persistentes, lanceolatae, acuminatae, superiores ovatae, acuminatae, 1 cm. longae, basi 4 mm. latae. *Flores* plures, congesti, pedicellis 2 cm. longis pubescentibus. *Sepala* oblongo-ovata, acuta, extus puberula. *Petala* lateralialia sepalis similia, minora; labellum 1 cm. longum, lobis lateralibus oblongis apicibus rotundatis brevibus, epichilio (lobo medio) profunde bilobo, ungue longo angusto, lobis spathulatis unguiculatis apicibus subabrupte rotundatis, callis 7-8 in ungue uniseriatis tuberculiformibus, calcare gracillimo filiformi 1 cm. longo. *Columna* basi angustata, superne incrassata. *Anthera* ovata, acuta.

MALAY PENINSULA. Jalor, Buket Besar, in sylvis, alt. 600 m. *Gwynne-Vaughan* 261.

An unusually pubescent plant, almost velvety on the petiole, with a deep-cut terminal lobe, and almost racket-shaped lobules.

1068. ***Vanda punctata* Ridley** [Orchidaceae-Vandae]; *V. hastiferae* Reichb. f. affinis, sed floribus parvis et labio lato lyrato piscis caudae instar insignis.

Caulis validulus, eo *V. insignis* similis. *Folia* angusta, lorata, inaequaliter biloba lobis acutis, 11 cm. longa, 0.7 mm. lata, costa in mucronulo producta. *Racemus* sexflorus, 15 cm. longus. *Bractee* parvae, ovatae. *Pedicelli* cum ovariis gracilibus 3 cm. longi. *Flores* patuli, 2 cm. lati. *Sepalum* posticum angustum, apice incurvo, lateralialia oblonga, spathulata, angusta. *Petala* falcata, spathulata, aequilata, omnia flava, rubro-punctata in dorso flavescentia. *Labellum* album, ovatum, lobis lateralibus brevibus oblongis falcatis, epichilio ovato latiore versus apicem angustato, apice dilatato bilobo instar caudae piscis, calcare conico horizontale brevi, callo in are sito truncato quadrangulati sub trilobo. *Columna* lata, alba, brevis crassa, subquadrata. *Anthera* ovata, plana. *Pollinia* reniformia, vel ovata, aurantiaca, caudiculo oblongo lato, disco magno quadrato atrorubente. *Stigma* ovoideum. *Rostellum* breve, latum, ovatum.

MALAY ARCHIPELAGO. Wetter Island. This new *Vanda* was found in a consignment of *Vanda insignis* Blume sent from Wetter Island near Timor in the Eastern Malay Archipelago, by Mr. Pereira of Singapore. It flowered in June 1897, and it is described here from the drawings and notes taken at that time.

1069. ***Habenaria* (Sect. *Platyglossa*) *medioflexa* Turrrill** (Orchidaceae-Ophrydeae); affinis *H. trichosanthes*, Wall., sed bracteis receptaculo (ovario) aequilongis vel longioribus, floribus minoribus, labelli segmento medio lateralibus brevioribus reflexo distinguitur.

Herba erecta, pedalis vel ultra, caule tereto glabro. *Folia* caulina lanceolata apice attenuata, acuta, 7 cm. longa, 1.7 cm.

lata, glabra. *Racemus* circiter 10-florus, 9 cm. longus, glaber; bracteae lineari-lanceolatae, acutissimae, usque ad 3 cm. longae et 3 mm. latae. *Receptaculum* (ovarium) 2.2 cm. longum. *Sepalum* posticum ovatum, 6 mm. longum, 4 mm. latum, triner vatum. *Sepala* lateralialia inaequaliter ovata, acuta, 7 mm. longa, 5 mm. lata, 5-nervata. *Petalu* lateralialia anguste linearialia, 5 mm. longa, uninervata. *Labellum* trilobatum, lobis lateralibus fere ad basim in segmentis numerosis angustissime linearibus divisis, 1.4 cm. longis, lobo medio lineare 1 cm. longo reflexo; calcar sigmoideum, in parte proxima 1 cm. longum fere capillaceum, in parte distale 2.5 cm. longum. *Antherae* loculi clavati 5 mm. longi. *Stigmata* triangularia, 2.5 mm. longa.

Described from a specimen cultivated in the Botanic Gardens, Singapore. Mr. I. H. Burkill informs us that it was originally collected at Pungah, Lower Siam, by Mohammed Haniff and Mohammed Nur, and a specimen, under the number 3858, is preserved in the Singapore Herbarium.

1070. *Curcuma sulcata* Haines [Zingiberaceae-Hedychieae]; *C. angustifoliae* Roxb. affinis sed foliis ellipticis et plicatis (sulcatis) et juventute supra puberulis differt, bractearum forma coloreque et florum colore etiam quodammodo distincta.

Rhizoma 5-8 cm. longum extus brunneum intus pallide flavum, leviter aromaticum, filipendulum; tubera sessilia 0. *Folia* elliptica vel elliptico-oblonga, inter nervos sulcata, 20-40 cm. longa, 9-16 cm. lata, basi inaequalia, apice caudata ad 1-2 cm., supra viridia juventute in nervis puberula, subtus pallidiora et minutissime albo-punctata. *Petiole* ad 20 cm. longi, virides vel rubescentes. *Spica* 9-15 cm. longa, vere a latere sed aestate inter folia nascente, pedunculo brevi. *Bracteae* floriferae 2.5-4 cm. longae, parte libera 1.2-2 cm. longa, rubescenti vel viridibrunnea vel apice purpurea; bracteae steriles 4 cm. longae, 0.5-1.2 cm. latae, summae angustiores, lineari-oblongae, apicibus rotundatis, versus apices violaceae et minute pubescentes. *Flores* e bracteis 1-2 cm. exserti. *Ovarium* subglobosum hirsutum, pilis brunneis. *Calyx* 8 mm. longus pallide-puniceus dentibus obtusis. *Corollae* tubus albus et tenuis usque ad 1 cm. longitudinem deinde ventricosus; lobi rubescentes vel saturate rubri, 2.5 cm. longi, lobo dorsali acute mucronato. *Staminodia* lateralialia alba vel pallide flava rubrotincta oblonga quodammodo sursum versus latiora, 8 mm. lata corollam leviter superantia. *Labium* ovatum apice abrupte angustato obtuso rotundato ad 3-4 mm. fisso, ut staminodia coloratum sed ad medium saturate flavum. *Stamen* dorso puberulum.

INDIA. Central Provinces, in the Vindhyan Mountains, elevation 200-300 m. *Haines* 170 P.

Specimens of the plant were collected in May and June in flower and grown on by me until the leaves were mature. It was then found to flower again from the centre of the leaves as described by Roxburgh in the case of *C. rubescens*, of which I took it to be a variety lacking the deep red midrib of that species.

So far as I am aware Roxburgh's *C. rubescens* is known only from his description and unpublished drawings. The last depict a glabrous ovary. If the entirely glabrous condition of the ovary in the figure is not an omission of the artist, the character is an important one and our plant is not closely allied to *C. rubescens*. The alliance with *C. angustifolia* is very close as the bracts and flowers of that species are sometimes pretty deeply coloured.

XI.—ADDITIONS TO THE INDEX KEWENSIS.

Though every care is taken to make the successive supplements of the Index Kewensis as complete as possible, some names have been unavoidably omitted owing to no copies of the works in which they were published being available for consultation. This was the case with the second edition of Sturm's Flora von Deutschland (Stuttgart, 1900-1906), which contained about 750 new names proposed by E. H. L. Krause. These have now been listed by Mr. Sprague for inclusion in the sixth supplement of the Index Kewensis, a copy of Krause's work having been lent to Kew for the purpose by Mr. C. E. Salmon.

In view of the large number of new names proposed by Krause and of the fact that some have been inadvertently duplicated by later authors, it seems desirable to publish a condensed list, pending the appearance of the sixth supplement. The date of publication is given after the generic name, and the synonyms are added in brackets after the specific names.

Most of the new combinations proposed by Krause are the result of his adoption of a very wide generic concept. Thus he included all genera of *Cruciferae* under the generic name *Crucifera*, and united *Lycium*, *Atropa*, *Physalis* and *Nicandra* in an aggregate genus *Boberella*. Krause reserved the specific names *hybridus* and *dubius* for hybrids and doubtful plants respectively. Thus *Papaver dubium* E. H. L. Krause (not of Linn.) is any doubtful *Papaver*, and *Chenopodium hybridum* denotes any hybrid *Chenopodium*. Such names have not been included in the present list, but will appear in the Supplement. Missbach and E. H. L. Krause are joint authors of the new combinations under *Carex* and *Cyperus*: for the remainder Krause is responsible.

Actaea (1901).

Xanthorrhiza (*X. apiifolia*).

Agrimonia (1904).

falsa (*agrimonioides*).

Aldrovandia (1902).

generalis (*vesiculosa*).

Alsine (1901).

alpina (*Cerastium a.*).

arvensis (*Cerastium a.*).

brachypetala (*Cerastium b.*).

corniculata (*Cerastium c.*).

Friesiana (*Stellaria F.*).

glauca (*Stellaria g.*).

glomerata (*Cerastium g.*).

holosteoides (*Lepyrödiclis h.*).

latifolia (*Cerastium l.*).

mantica (*Cerastium m.*).

multicaulis (*Stellaria m.*).

pellucida (*Cerastium p.*).

polygonoides (*Arenaria p.*).

quarternella (*Moenchia q.*).

silvatica (*Cerastium s.*).

tetrandra (*Cerastium t.*).

tomentosa (*Cerastium t.*).

trivialis (*Cerastium t.*).

uliginosa (*Stellaria u.*).

viscida (*Stellaria v.*).

- Amarantus** (1901).
arvensis (*Digera a.*).
- Amsinckia** (1903).
media (*A. intermedia*).
- Anagallis** (1901).
minima (*Centunculus m.*).
- Anchusa** (1903).
primuliflora (*Alkanna p.*).
- Anemone** (1901).
Atragene (*Atragene alpina*).
Flammula (*Clematis F.*).
integrifolia (*Clematis i.*).
recta (*Clematis r.*).
Vitalba (*Clematis V.*).
Viticella (*Clematis V.*).
- Aquilegia** (1901).
thalictroides (*Isopyrum t.*).
- Aster** (1905).
ambiguus (*Conyza a.*).
Bellis (*Bellis perennis*).
canadensis (*Erigeron c.*).
Erigeron (*Erigeron acer*).
glabratus (*Erigeron g.*).
rupestris (*Erigeron alpinus*).
Stenactis (*Stenactis annua*).
uniflorus (*Erigeron u.*).
Villarsii (*Erigeron V.*).
- Astragalus** (1901).
alpinus (*Phaca a.*).
phacinus (*A. alpinus Linn.*).
- Bartsia** (1903).
litoralis (*Euphrasia l.*).
- Bidens** (1905).
leucanthemus (*Coreopsis l.*).
Tripteris (*Coreopsis T.*).
- Boberella** (1903).
Alkekengi (*Physalis A.*).
angulata (*Physalis a.*).
Belladonna (*Atropa B.*).
halimifolia (*Lycium h.*).
lanceolata (*Physalis l.*).
peruviana (*Physalis p.*).
pubescens (*Physalis p.*).
rhombifolia (*Lycium r.*).
- Bryonia** (1904).
Elaterium (*Momordica E.*).
monoeca (*B. alba*).
- Calla** (1906).
generalis (*C. aethiopica*).
- Cannabis** (1905).
generalis (*C. sativa*).
- Carduus** (1906).
Cynara (*Cynara Cardunculus*).
nemoralis (*Cirsium n.*).
- Carex** (1900).
Kobresia (*Kobresia caricina*).
scirpina (*Kobresia s.*).
- Caucalis** (1904).
microcarpa (*Torilis m.*).
neglecta (*Torilis n.*).
- Centaurea** (1906).
Carthamus (*Carthamus tinctorius*).
pseudobenedicta (*Cnicus p.*).
Saussurea (*Saussurea alpina*).
- Centaureium** (1903).
filiforme (*Microcala f.*).
perfoliatum (*Chlora p.*).
pulchellum (*Erythraea p.*).
serotinum (*Chlora s.*).
- Chamaemelum** (1905).
achilleifolium (*Chrysanthemum a.*).
achilleum (*Achillea nobilis*).
alpinum (*Chrysanthemum a.*).
altissimum (*Anthemis a.*).
atratum (*Achillea a.*).
aureum (*Cotula a.*).
Balsamita (*Tanacetum B.*).
cartilagineum (*Achillea c.*).
Chamomilla (*Matricaria C.*).
Cladanthus (*Cladanthus arabicus*).
Clavennae (*Achillea C.*).
coarctatum (*Achillea c.*).
coronarium (*Chrysanthemum c.*).
coronopifolium (*Chrysanthemum c.*).
corymbosum (*Chrysanthemum c.*).
crithmifolium (*Achillea c.*).
Gerberi (*Achillea G.*).
Leucanthemum (*Chrysanthemum L.*).
leucocephalum (*Gymnocline l.*).
macrophyllum (*Achillea m.*).
Millefolium (*Achillea M.*).
Myconis (*Chrysanthemum M.*).
Parthenium (*Matricaria P.*).
Ptarmica (*Achillea P.*).
radiatum (*Anacyclus r.*).
ruthenicum (*Achillea r.*).
segetum (*Chrysanthemum s.*).
suaveolens (*Chrysanthemum s.*).
tanacetifolium (*Achillea t.*).
Tanacetum (*Chrysanthemum T.*).
tomentosum (*Achillea t.*).

Chenopodium (1901).
agreste (*C. album*).
angustifolium (*Atriplex a.*).
arenarium (*Atriplex a.*).
Dethardingianum (*Atriplex lit-*
torale).
hortense (*Atriplex h.*).
latifolium (*Atriplex l.*).
oblongifolium (*Atriplex o.*).
oleraceum (*Spinacia o.*).
pedunculatum (*Atriplex p.*).
roseum (*Atriplex r.*).
tataricum (*Atriplex t.*).

Cichorium (1906).
Aposeris (*Aposeris foetida*).
Arnoseris (*Arnoseris pusilla*).
barbatum (*Tolpis b.*).
Rhagadiolus (*Rhagadiolus edulis*).

Convallaria (1906).
amplexifolia (*Uvularia a.*).

Coriandrum (1904).
radians (*Bifora r.*).

Coronilla (1901).
comosa (*Hippocrepis c.*).
compressa (*Ornithopus c.*).
ebracteata (*Ornithopus e.*).
perpusilla (*Ornithopus p.*).
serradella (*Ornithopus sativus*).

Crocus (1906).
parviflorus (*C. vernus*, var. *p.*).

Crucifera (1902).
Aethionema (*Aethionema saxa-*
tile).
africana (*Malcolmia a.*).
aizoides (*Draba a.*).
albida (*Arabis a.*).
aleppica (*Erucaria a.*).
Alliaria (*Erysimum a.*).
alpestris (*Arabis ciliata*).
altissima (*Sisymbrium a.*).
alyssoides (*Alyssum campestre*).
Alyssum (*Alyssum montanum*).
amara (*Cardamine a.*).
amphibia (*Nasturtium a.*).
apetala (*Lepidium a.*).
Arabis (*Arabis alpina*).
arcuata (*Barbarea a.*).
arenosa (*Arabis a.*).
argentea (*Alyssum a.*).
Armoracia (*Cochlearia A.*).
Aubrieta (*Aubrieta deltoidea*).
auriculata (*Arabis a.*).
austriaca (*Erysimum a.*).
Barbarea (*Erysimum B.*).
bellidifolia (*Arabis b.*).
bellidoides (*Arabis b.*).

Berteroa (*Berteroa incana*).
Biscutella (*Biscutella laevigata*).
Boreava (*Boreava orientalis*).
Brassica (*Brassica oleracea*).
bulbifera (*Cardamine b.*).
Cakile (*Bunias C.*).
calycina (*Alyssum c.*).
Camelina (*Camelina sativa*).
canescens (*Erysimum canescens*).
Capsella (*Capsella Bursa-pastoris*).
capselloides (*Draba muralis*).
Cardamine (*Cardamine hirsuta*).
Cardaria (*Cardaria Draba*).
Cheiranthus (*Brassica C.*).
Cheiri (*Cheiranthus C.*).
Cochlearia (*Cochlearia Linnaei*).
coerulea (*Arabis coerulea*).
coerulescens (*Thlaspi c.*).
Columnae (*Sisymbrium C.*).
Conringia (*Conringia orientalis*).
contracta (*Arabis c.*).
Corvini (*Crambe C.*).
Crantziana (*Arabis C.*).
crepidifolia (*Erysimum c.*).
cuspidata (*Syrenia c.*).
danica (*Cochlearia d.*).
Diplotaxis (*Diplotaxis muralis*).
dissecta (*Sinapis d.*).
divaricata (*Iberis d.*).
diversifolia (*Lepidium perfolia-*
tum).
eckartsbergensis (*Sisymbrium e.*).
edentula (*Alyssum e.*).
elongata (*Brassica e.*).
enneaphylla (*Dentaria e.*).
Erophila (*Erophila vulgaris*).
erratica (*Rapistrum glabrum*).
Eruca (*Eruca sativa*).
Erucago (*Bunias E.*).
erucoides (*Diplotaxis e.*).
Erysimum (*Erysimum cheiran-*
thoides).
Euclidium (*Euclidium syriacum*)
fontana (*Cardamine f.*).
frigida (*Draba f.*).
Gerardi (*Arabis G.*).
graminifolia (*Lepidium g.*).
grandiflora (*Camelina g.*).
Halleri (*Arabis H.*).
heptaphylla (*Dentaria h.*).
hieracifolia (*Erysimum h.*).
Hirschfeldia (*Hirschfeldia ad*
pressa).
Hornungia (*Hornungia petraea*).
Hutchinsia (*Hutchinsia alpina*).
Iberis (*Iberis amara*).
Impatiens (*Cardamine I.*).
Ionopsidium (*Ionopsidium*
acaule).
Irio (*Sisymbrium I.*).
Isatis (*Isatis tinctoria*).
Johannis (*Draba J.*).

juncea (Brassica j.).
Kernera (*Kernera saxatilis*).
Koniga (*Koniga maritima*).
Laelia (*Laelia orientalis*).
Lamarckii (*Erucastrum Lamarckii*).
Lampsana (*Sinapis alba*).
latifolia (*Lepidium* l.).
lepidioides (*Lepidium heterophyllum*).
Lepidium (*Lepidium campestre*).
linicola (*Camelina* l.).
Loeselii (*Sisymbrium* L.).
Lunaria (*Lunaria annua*).
Malcolmia (*Malcolmia maritima*).
maritima (*Crambe* m.).
matronalis (*Hesperis* m.).
media (*Barbarea intermedia*).
montana (*Thlaspi* m.).
multifida (*Sisymbrium canescens*).
Myagrum (*Myagrum perfoliatum*).
Napus (Brassica N.).
Nasturtium (*Lepidium sativum*).
nemorosa (*Draba* n.).
Neslia (*Neslia paniculata*).
novemfolia (*Dentaria glandulosa*).
odorata (*Iberis* o.).
palustris (*Nasturtium* p.).
pannonica (*Erysimum* p.).
parviflora (*Cardamine* p.).
pauciflora (*Arabis* p.).
pendula (*Arabis* p.).
pentaphylla (*Dentaria* p.).
perfoliata (*Thlaspi* p.).
Petrocallis (*Petrocallis pyrenaica*).
pinnata (*Iberis* p.).
Pollichii (*Erucastrum* P.).
praecox (*Barbarea* p.).
pratensis (*Cardamine* p.).
procumbens (*Capsella* p.).
Psilonema (*Psilonema minimum*).
pumila (*Arabis* p.).
pyrenaica (*Nasturtium* p.).
Rapa (Brassica R.).
Raphanistrum (*Raphanus* R.).
rapistra (*Rapistrum perenne*).
rediviva (*Lunaria* r.).
repanda (*Erysimum* r.).
resedifolia (*Cardamine* r.).
Roripa (*Roripa austriaca*).
rostrata (*Alyssum* r.).
rotundifolia (*Thlaspi* r.).
rubella (*Capsella* r.).
ruderalis (*Lepidium* r.).
Ruellii (*Coronopus* R.).
rugosa (*Rapistrum* r.).
Sauteri (*Draba* S.).
saxatilis (*Alyssum* s.).

semperflorens (*Iberis* s.).
Senebiera (*Senebiera pinnatifida*).
silvestris (*Nasturtium* s.).
Sinapis (*Sinapis nigra*).
sinapistra (Brassica S.).
Sisymbrium (*Sisymbrium officinale*).
Sophia (*Sisymbrium* S.).
stricta (*Barbarea* s.).
strictissima (*Sisymbrium* s.).
Subularia (*Subularia aquatica*).
supina (*Sisymbrium* s.).
Teesdalea (*Teesdalea nudicaulis*).
tenella (*Raphanus* t.).
tenuifolia (*Diplotaxis* t.).
Thaliana (*Arabis* T.).
Thlaspi (*Thlaspi arvense*).
thlaspidoides (*Thlaspi alliaceum*).
trifolia (*Cardamine* t.).
tristis (*Hesperis* t.).
tomentosa (*Draba* t.).
Turritis (*Turritis glabra*).
umbellata (*Iberis* u.).
umbrosa (*Arabis* u.).
utriculata (*Alyssum* u.).
viminea (*Diplotaxis* v.).
virginica (*Lepidium* v.).
Wahlenbergii (*Draba* W.).
wolgensis (*Sisymbrium* w.).

Cryptomeria (1906).

generalis (C. japonica).

Cucumis (1904).

vulgaris (*Citrullus vulgaris*).

Cynoglossum (1903).

patulum (*Lappula* p.).

Cyperus (1900).

compressus (*Schoenus* c.).
fluitans (*Scirpus* f.).
Holoschoenus (*Scirpus* H.).
lacustris (*Scirpus* l.).
maritimus (*Scirpus* m.).
multicaulis (*Scirpus* m.).
ovatus (*Scirpus* o.).
paluster (*Scirpus* p.).
parvulus (*Scirpus* p.).
pauciflorus (*Scirpus* p.).
pungens (*Scirpus* p.).
radicans (*Scirpus* r.).
rufus (*Scirpus* r.).
setaceus (*Scirpus* s.).
silvaticus (*Scirpus* s.).
supinus (*Scirpus* s.).
Tabernaemontani (*Scirpus* T.).
triqueter (*Scirpus* t.).
uniguttatus (*Scirpus* u.).

- Daphne* (1902).
Passerina (*Stellera* P.).
ratisbonensis (*Cytisus* r.).
sessilifolia (*Cytisus* s.).
- Daucus* (1904).
Caucalis (*Caucalis daucoides*).
infestus (*Scandix* i.).
latifolius (*Laserpitium* l.).
microcarpus (*Torilis* m.).
nodosa (*Tordylium* n.).
prutenicus (*Laserpitium* p.).
Siler (*Laserpitium* S.).
Turgenia (*Turgenia latifolia*).
- Delphinium* (1901).
paniculatum (*Aconitum* p.).
- Diclytra* (1902).
cirrosa (*Adlumia fungosa*).
- Dictamnus* (1902).
generalis (*D. albus*).
- Drosera* (1902).
media (*D. intermedia*).
- Elatine* (1902).
gyrosperma (*E. Hydropiper*).
- Epipogon* (1905).
generalis (*E. aphyllus*).
- Euonymus* (1902).
scandens (*Celastrus* s.).
- Eupatorium* (1905).
albifrons (*Cacalia* a.).
conyzoides (*Ageratum* c.).
viride (*Adenostyles* v.).
- Filago* (1905).
leontopodioides (*Micropus erectus*).
- Fumaria* (1902).
ochroleuca (*Corydalis* o.).
- Galium* (1904).
azureum (*Asperula* a.).
molluginoides (*Asperula* m.).
Rubia (*Rubia tinctorum*).
Sherardia (*Sherardia arvensis*).
sherardiiflorum (*Asperula arvensis*).
stylosum (*Crucianella* s.).
- Genista* (1901).
capita (*Cytisus* c.).
elongata (*Cytisus* e.).
europaea (*Ulex* e.).
Laburnum (*Cytisus* L.).
nigricans (*Cytisus* n.).
purpurea (*Cytisus* p.).
- Gentiana* (1903).
Swertia (*Swertia perennis*).
- Geum* (1904).
octopetalum (*Dryas* o.).
- Glaux* (1901).
generalis (*G. maritima*).
- Gnaphalium* (1905).
alatum (*Ammobium* a.).
luteolum (*G. luteo-album*).
- Hedysarum* (1901).
gallicaput (*Onobrychis Caput-galli*).
- Helianthus* (1905).
fulgidus (*Rudbeckia* f.).
hirtus (*Rudbeckia* h.).
laciniatus (*Rudbeckia* l.).
pinnatus (*Rudbeckia* p.).
- Hieracium* (1906).
achyrophorum (*Achyrophorus maculatus*).
Andryala (*Andryala integrifolia*).
Apargia (*Apargia Taraxaci*).
aristatum (*Scorzonera* a.).
squamosum (*Leontodon* s.).
Chondrilla (*Chondrilla juncea*).
Cicerbita (*Cicerbita macrophylla*).
Cichorium (*Cichorium Intybus*).
corniculatum (*Taraxacum* c.).
glabrum (*Hypochoeris* g.).
Helminthia (*Helminthia echioides*).
Lactuca (*Lactuca Scariola*).
Lampsana (*Lapsana communis*).
Leontodon (*Leontodon Taraxacum*).
leucorrhizum (*Tragopogon porri-folius*).
majus (*Tragopogon* m.).
Mulgedium (*Mulgedium alpinum*).
Mycelis (*Mycelis muralis*).
nemausense (*Andryala* n.).
nicaeëense (*Crepis* n.).
oporinum (*Oporinia autumnalis*).
palustre (*Sonchus* p.).
picridoides (*Picris pyrenaica*).
Picris (*Picris hieracioides*).
Plumieri (*Sonchus* P.).
podospermoides (*Podospermum octangulare*).
Podospermum (*Podospermum laciniatum*).
Prenanthes (*Prenanthes purpurea*).

- proteiforme (*Leontodon* p.).
 quercinum (*Lactuca* q.).
 radicans (*Hypochoeris* r.).
 salignum (*Lactuca* s.).
 salinum (*Taraxacum* s.).
Scorzonera (*Scorzonera hispanica*).
 scorzoneroides (*Scorzonera hu-*
 milis).
 setosum (*Crepis* s.).
Sonchus (*Sonchus asper*).
 squamosum (*Leontodon* s.).
 subcoeruleum (*Scorzonera pur-*
 purea).
 taraxacifolium (*Crepis* t.).
 Tauschii (*Crepis chondrilloides*).
 Thrincia (*Thrincia hirta*).
 Tragopogon (*Tragopogon pratensis*).
 uniflorum (*Hypochoeris* u.).
 vimineum (*Prenanthes* v.).
 virens (*Crepis* v.).
 virosum (*Lactuca* v.).
- Hippuris* (1901).
 generalis (*H. vulgaris*).
- Hyacinthus* (1906).
 amoenus (*Scilla* a.).
 autumnalis (*Scilla* a.).
 bifolius (*Scilla* b.).
 Boucheanus (*Ornithogalum* B.).
 Cyrilli (*Ornithogalum montanum*)
 italicus (*Scilla* i.).
 Kochii (*Ornithogalum* K.).
 myogalea (*Ornithogalum nutans*).
 neglectus (*Muscari* n.).
 sulfureus (*Ornithogalum* s.).
 tenuiflorus (*Muscari* t.).
 umbellatus (*Ornithogalum* u.).
- Hyoscyamus* (1903).
 luridus (*Anisodus* l.).
- Inula* (1905).
 aquatica (*Asteriscus* a.).
 Bupthalmum (*Bupthalmum*
 salicifolium).
 Telekia (*Telekia speciosa*).
- Jussieua* (1901).
 Isnardia (*Isnardia palustris*).
- Lamium* (1903).
 Molucella (*Molucella laevis*).
 orientale (*Wiedemannia* o.).
- Leptopyrum* (1901).
 generale (*L. fumarioides*).
- Lilium* (1906).
 bononiense (*Tulipa sylvestris*).
 Meleagris (*Fritillaria* M.).
 persicum (*Fritillaria imperialis*).
- Limodorum* (1905).
 generale (*L. abortivum*).
- Lonicera* (1904).
 Weigela (*Weigela rosea*).
- Lotus* (1901).
 purpureus (*Tetragonolobus* p.).
- Malva* 1902).
 Abutilon (*Sida* A.).
 Althaea (*Althaea officinalis*).
 hirsuta (*Althaea* h.).
 pallida (*Althaea* p.).
 rhombifolia (*Sida* r.).
 rosea (*Althaea* r.).
 spinosa (*Sida* s.).
- Marrubium* (1903).
 Ballota (*Ballota alba*).
- Medicago* (1901).
 alba (*Melilotus* a.).
 altissima (*Melilotus* a.).
 Bessieriana (*Trigonella* B.).
 coelestria (*Trigonella* c.).
 dentata (*Melilotus* d.).
 foenugraeca (*Trigonella Foenum-*
 graecum).
 gladiata (*Trigonella* g.).
 gracilis (*Melilotus* g.).
 italica (*Melilotus* i.).
 Justischmidtii (species advena).
 officinalis (*Melilotus* o.).
 parviflora (*Melilotus* p.).
 ruthenica (*Melilotus* r.).
 sulcata (*Melilotus* s.).
 Trigonella (*Trigonella lacinata*).
- Mespilus* (1904).
 brevispina (*Crataegus* b.).
- Moschatellina* (1904).
 generalis (*Adoxa Moschatellina*).
- Myosotis* (1902).
 media (*M. intermedia*).
- Nicotiana* (1903).
 violacea (*Petunia* v.).
- Nymphaea* (1901).
 polystigma (*N. alba*).
- Oenothera* (1901).
 elegans (*Clarkia* c.).
 pulchella (*Clarkia* p.).
- Orchis* (1905).
 platanthera (*Conopsidium* p.).
 stenantha (*Conopsidium* s.).

- Papaver (1902).**
agreste (*P. dubium*).
mexicanum (*Argemone m.*).
- Paronychia (1901).**
alpina (*Herniaria a.*).
Herniaria (*Herniaria glabra*).
hirsuta (*Herniaria h.*).
incana (*Herniaria i.*).
litoralis (*Corrigiola l.*).
- Pisum (1901).**
Clymenum (*Lathyrus C.*).
ensifolium (*Orobus e.*).
flavum (*Lathyrus annuus*).
heterophyllum (*Lathyrus h.*).
hirsutum (*Lathyrus h.*).
inconspicuum (*Lathyrus i.*).
Klinggraeffianum (*Lathyrus pisi-*
formis).
Lathyrus (*Lathyrus sativus*).
latifolium (*Lathyrus l.*).
montanum (*Lathyrus m.*).
nigrum (*Orobus n.*).
luteum (*Orobus l.*).
Nissolium (*Lathyrus N.*).
odoratum (*Lathyrus o.*).
palustre (*Lathyrus p.*).
pannonicum (*Lathyrus p.*).
pratense (*Lathyrus p.*).
rubrum (*Lathyrus Cicera*).
silvestre (*Lathyrus s.*).
tuberosum (*Lathyrus t.*).
vernum (*Lathyrus v.*).
- Polycarpaea (1901).**
tetraphylla (*Polycarpon t.*).
- Potentilla (1904).**
moschata (*Fragaria m.*).
virginiana (*Fragaria v.*).
viridis (*Fragaria v.*).
- Prasium (1903).**
Marrubium (*Marrubium vulgare*).
stachydium (*Stachys annua*).
Stachys (*Stachys recta*).
- Primula (1901).**
arvensis (*Androsace maxima*).
carnea (*Androsace c.*).
Chamaejasme (*Androsace C.*).
elongata (*Androsace e.*).
glacialis (*Androsace g.*).
helvetica (*Androsace h.*).
obtusifolia (*Androsace o.*).
septentrionalis (*Androsace s.*).
- Ranunculus (1901).**
argenteus (*R. aconitifolius*).
Gelertii (*R. Baudotii*).
minimus (*Myosurus m.*).
thoroides (*R. hybridus*).
truncatus (*Batrachium t.*).
- Rapunculus (1904).**
albidus (*Phyteuma spicatum*).
linifolius (*Campanula l.*).
redivivus (*Campanula rapunc-*
loides).
- Rhododendron (1901).**
procumbens (*Azalea p.*).
- Rubus (1904).**
aestivus (*sp. aggreg.*).
- Sanicula (1904).**
Astrantia (*Astrantia major*).
bavarica (*Astrantia b.*).
Epipactis (*Astrantia E.*).
- Scheuchzeria (1905).**
generalis (*S. palustris*).
- Sedum (1902).**
arachnoideum (*Sempervivum a.*).
Bulliardi (*Bulliarda aquatica*).
montanum (*Sempervivum m.*).
sibiricum (*S. hybridum*).
soboliferum (*Sempervivum s.*).
Tillaei (*Tillaea muscosa*).
- Selinum (1904).**
agriangelica (*Angelica sylvestris*).
alpinum (*Heracleum a.*).
ammoides (*Ammi majus*).
Anisum (*Pimpinella A.*).
Anthriscus (*Tordylium A.*).
aquilegifolium (*Laserpitium a.*).
aromaticum (*Chaerophyllum a.*).
Athamanta (*Seseli A.*).
aureum (*Chaerophyllum a.*).
austriacum (*Heracleum a.*).
Balansae (*Scandix B.*).
Berula (*Berula angustifolia*).
brevicaule (*Bupleurum b.*).
Bulbocastanum (*Bunium B.*).
bulbosum (*Chaerophyllum b.*).
Bupleurum (*Bupleurum falca-*
tum).
Carvi (*Carum C.*).
Casparyi (*Heracleum sibiricum*).
Cerefolium (*Scandix C.*).
Cicutaria (*Chaerophyllum syl-*
vestre).
coloratum (*Seseli c.*).
conioides (*Phellandrium c.*).
Conium (*Conium maculatum*).
copticum (*Ammi c.*).
Coriandrum (*Coriandrum sati-*
vum).
creticum (*Pimpinella c.*).
croceum (*Bupleurum c.*).
Cuminum (*Cuminum Cyminum*).
Cynapium (*Aethusa C.*).
Dioscoridis (*Smyrniolum D.*).
elegans (*Chaerophyllum e.*).

- Falcaria* (Sium F.).
filicaule (Bupleurum f.).
Fischeri (Ligusticum F.).
fistulosum (Enanthe f.).
Foeniculum (Anethum F.).
graveolens (Apium g.).
Hippomarathrum (Seseli H.).
Hoffmanni (Trinia H.).
ibericum (Scandix i.).
inundatum (Sison i.).
janotta (Bunium majus).
juncoides (Bupleurum nodiflorum).
Kochii (Chaerophyllum hirsutum).
Lachenalii (Enanthe L.).
leptophyllum (Pimpinella l.).
Levisticum (Ligusticum L.).
Libanotis (Athamanta L.).
longifolium (Bupleurum l.).
Meum (Anthamanta M.).
multicaule (Seseli m.).
Mutellina (Phellandrium M.).
Myrrhis (Myrrhis Odorata).
nitidum (Chaerophyllum n.).
nodiflorum (Sium n.).
opacum (Pastinaca o.).
Ostericum (Ostericum palustre).
Pecten (Scandix Pecten-Veneris).
Perfoliatum (Bupleurum p.).
Petroselinum (Apium P.).
Phellandrium (Ligusticum P.).
Pimpinella (Pimpinella Saxifraga).
pimpinelloides (Pimpinella magna).
Pleurospermum (Pleurospermum austriacum).
Podagraria (Aegopodium P.).
Pollichii (Oenanthe P.).
protractum (Bupleurum p.).
ranunculoides (Bupleurum r.).
repens (Sium r.).
Silaus (Peucedanum S.).
simplex (Laserpitium s.).
Sisarum (Sium S.).
Sium (Sium latifolium).
Sphondylium (Heracleum S.).
spinosum (Echinophora s.).
temulum (Chaerophyllum t.).
tenuissimum (Bupleurum t.).
tordyliastrum (Tordylium maximum).
Torilis (Tordylium Anthriscus).
Trinia (Trinia glauca).
venosum (Cnidium v.).
verticillatum (Sison v.).
Villarsii (Chaerophyllum V.).
virosum (Cicuta v.).
Visnaga (Daucus V.).
Wilhelmsii (Heracleum W.).
- Senecio* (1905).
Arnica (Arnica montana).
austriacus (Doronicum a.).
Columnae (Doronicum C.).
pardalianches (Doronicum p.).
plantagineus (Doronicum p.).
- Silene* (1901).
agricola (S. gallica).
alba (Lychnis a.).
alsinoides (Gypsophila a.).
arenaria (Dianthus a.).
barbata (Dianthus b.).
caesia (Dianthus c.).
Carthusianorum (Dianthus C.).
caryophylla (Dianthus C.).
chalconica (Lychnis c.).
cuculi (Lychnis Flos-cuculi).
deltoides (Dianthus d.).
elegans (Gypsophila e.).
fastigiata (Gypsophila f.).
fulgens (Lychnis f.).
Githago (Agrostemma G.).
Jovis (Lychnis Flos-Jovis).
macrocarpa (Lychnis m.).
muralis (Gypsophila m.).
ocymoides (Saponaria o.).
paniculata (Gypsophila p.).
plumaria (Dianthus p.).
prolifera (Dianthus p.).
repens (Gypsophila r.).
rubra (Lychnis r.).
Seguierii (Dianthus S.).
silvestris (Dianthus s.).
superba (Dianthus s.).
Tunica (Tunica Saxifraga).
Vaccaria (Saponaria V.).
vaga (Dianthus Armeria).
- Solanum* (1903).
Justischmidtii (species advena).
- Specularia* (1904).
conferta (Prismatocarpus c.).
- Spergula* (1901).
echinosperma (Spergularia e.).
fallax (Spergularia f.).
- Stachys* (1903).
bicolor (Hesiodia b.).
remota (Sideritis r.).
romana (Sideritis r.).
- Stratiotes* (1905).
generalis (S. aloides).
- Telmatophace* (1906).
generalis (Lemna gibba).
- Thladiantha* (1904).
sparsiflora (T. dubia).

- Thymus (1903).
 Clinopodium (*Calamintha* C.).
 cunila (*Satureia hortensis*).
 Horminum (*Horminum pyrenai-*
 cum).
 Hyssopus (*Hyssopus officinalis*).
 Melissa (*Melissa officinalis*).

 Trifolium (1901).
 dalmatinum (*T. dalmaticum*).

 Trollius (1901).
 paluster (*Caltha* p.).

 Tussilago (1905).
 generalis (*T. Farfara*).

Vaccinium (1901).
 idaeum (*V. Vitis-Idaea*).

Vicia (1901).
 arietina (*Cicer* a.).
 tollenda (*V. hybrida*).

Viola (1902).
 ammotropa (*V. tricolor*, var. a.).

Zannichellia (1905).
 maritima (*Z. pedicellata*).

Zinnia (1905).
 laevis (*Helianthus* l.).

XII.—MISCELLANEOUS NOTES.

MR. CECIL VICTOR BOLEY MARQUAND, M.A., F.L.S. has been appointed by the Minister of Agriculture and Fisheries an Assistant (Herbarium) in the Royal Botanic Gardens, Kew.

MR. T. G. MASON, B.A., late Economic Botanist, Imperial Department of Agriculture, West Indies, (*K.B.*, 1920, 218) has been appointed by the Secretary of State for the Colonies, Senior Botanist, Agricultural Department, Nigeria.

The Flora of Madras.*—The fifth part of Mr. Gamble's *Flora of the Presidency of Madras*, which has just been published, completes the family *Ebenaceae* begun in Part IV, and continues through the next eleven families as far as the genus *Ilysanthes* of *Scrophulariaceae*. The remainder of this last family is held over to Part VI. Several new varieties are described and the following new combinations for species adopted:—*Linociera zeylanica* (= *L. purpurea* Vahl.); *Rejoua dichotoma* (= *Tabernaemontana dichotoma* Roxb.); *Brachystelma brevitubulatum* (= *Ceropegia brevitubulata* Bedd., *Brachystelma Beddomei* Hook. f.); *Cordia evolutior* (= *C. fulvosa* C. B. Clarke with var. *evolutior*, not of Wight.); *Torenia travancorica* (= *T. asiatica* Hook.f.).

* *Flora of the Presidency of Madras*, by J. S. Gamble. Part IV. Published under the authority of the Secretary of State for India in Council. London: Adlard & Son & West Newman Ltd., 1923. Pp. 769-962. Price 10s., or 6 rupees 8 a. net.

PLATE II.

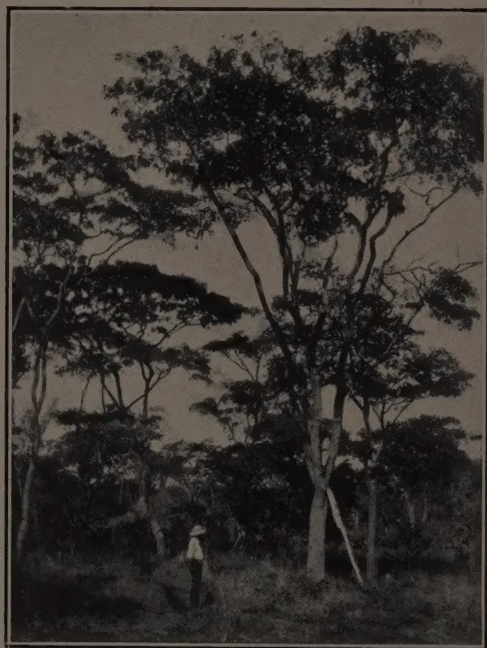


FIG. 1.



FIG. 2.